Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method for multi-dimensional imaging of a specimen region, comprising the steps of:

a) illuminating the specimen region;

b) moving an optical element to scan a focal plane through the thickness of the specimen region at a fixed viewpoint to produce a pseudo-projection image of the specimen onto a two-dimensional array of detectors during a single exposure of the two-dimensional array of detectors, wherein the pseudo-projection image thus formed includes an integration of a range of focal plane images

~~acquiring images from a continuum of parallel focal planes, wherein each of the continuum of parallel focal planes is within a specimen region perpendicular to the incident light rays, such that a pseudo-projection is compiled~~; and

~~b~~ c) repeating steps ~~step~~ a) and b) ~~is repeated~~ for two or more viewpoints to produce a set of pseudo-projection images.

Claim 2 (currently amended): The method of claim 1 wherein steps ~~step~~ a) and b) ~~is~~ are repeated about an arc at least partially encircling the specimen region ~~for tomographic image reconstruction~~.

Claim 3 (currently amended): The method of claim 1 wherein steps ~~step~~ a) and b) ~~is~~ are repeated about multiple arcs with a common line or point of intersection, the multiple arcs at least partially encircling the specimen region ~~for tomographic image reconstruction~~.

Claim 4 (currently amended): The method of claim 1, further comprising the step of using a computer algorithm to extract features of interest from one or more of the set of pseudo-projection images.

Claim 5 (canceled)

Claim 6 (currently amended): The method of claim [[5]] 1 wherein the optical element comprises an objective lens.

Claim 7 (currently amended): The method of claim [[5]] 1 wherein the step of moving an optical element is accomplished by driving a piezoelectric element coupled to the optical element.

Claims 8-9 (canceled)

Claim 10 (original): The method of claim 1, wherein the specimen region comprises a cell.

Claim 11 (original): The method of claim 1, wherein the specimen region comprises an artificially generated test phantom.

Claim 12 (currently amended): The method of claim 1 wherein ~~the step of acquiring images further includes~~ the step of illuminating the specimen region comprises illuminating with a laser.

Claim 13 (currently amended): The method of claim 1 wherein the step of ~~acquiring images further includes the step of~~ illuminating the specimen region comprises illuminating with substantially incoherent light.

Claim 14 (original): The method of claim 13 wherein the substantially incoherent light is generated by an arc lamp.

Claim 15 (currently amended): The method of claim 1 ~~wherein the step of acquiring~~

~~images comprises capturing images using~~ further comprising interposing at least one microlens array between the specimen region and the two-dimensional array of detectors.

Claim 16 (currently amended): The method of claim 1, wherein ~~the step of acquiring images comprises~~ the optical element is configured in ~~using~~ a confocal arrangement with an extended lateral field of view.

Claim 17 (currently amended): The method of claim 1, wherein ~~the step of acquiring images comprises~~ the step of moving comprises moving an oil-immersion lens along its optical axis ~~perpendicularly to acquire the continuum of parallel focal planes~~.

Claim 18 (original): The method of claim 1, wherein the specimen region comprises a specimen within a specimen holder, wherein the specimen holder is selected from the group consisting of a micro-capillary tube, a plastic bead, polymer optical fiber, and a microscope slide.

Claim 19 (currently amended): The method of claim 1 ~~wherein the step of acquiring images comprises capturing images using~~ further comprising coupling an array of collimator fibers to the two-dimensional array of detectors, wherein each fiber is mapped to a single pixel on the two-dimensional array of detectors ~~a photosensor array~~.

Claim 20 (currently amended): The method of claim 19 wherein the two-dimensional array of detectors ~~photosensor array~~ comprises a CCD array.

Claim 21 (currently amended): The method of claim 1 ~~wherein the step of acquiring images comprises capturing images~~ further comprises ~~using~~ positioning a microlens array ~~positioned~~ in front of a fiber bundle, where each fiber is mapped to a region on the two-dimensional array of detectors so as to limit acceptance angle, thereby increasing the rejection of scattered light.

Claim 22 (currently amended): The method of claim 1 wherein ~~the step of acquiring images comprises capturing images using~~ the two-dimensional array of detectors comprises a coherent fiber bundle attached to a detector pixel array.

Claim 23 (original): The method of claim 1, wherein the specimen region comprises a specimen that has been pressure-injected into a micro-capillary tube.

Claims 24-27 (canceled)

Claim 28 (currently amended): A method for multi-dimensional imaging of a specimen region, comprising the steps of:

a) arranging at least two sets of illumination and image capturing systems in an arc about a specimen region;

b) operating each set of illumination and image capturing systems to capture images from a continuum of parallel focal planes, where each of the continuum of parallel focal planes is within the specimen region and is substantially perpendicular to the incident light rays from one of said illumination and image capturing systems, such that a set of ~~pseudo-projection is~~ pseudo-projection images are simultaneously compiled from each of said illumination and image capturing systems, wherein each of the set of pseudo-projection images is produced during a single exposure of one of the illumination and image capturing systems and wherein each of the set of pseudo-projection images includes an integration of a range of focal plane images; and

c) ~~step b) is repeated for one or more viewpoints about an~~ wherein the arc at least partially ~~encircling~~ encircles the specimen region[[,]] so that the set of pseudo-projection images is suitable for use in tomographic image reconstruction.

Claims 29-53 (canceled)

Claim 54 (currently amended): The method of claim 1 further including the step of

separating ~~acquired~~ at least one of the set of pseudo-projection images based on color to produce two or more images, with one image primarily consisting of features generated by absorption by a dye/marker.

Claim 55 (currently amended): The method of claim 1 ~~wherein the step of acquiring images~~ further ~~includes~~ comprising the step of separating color in the specimen region to produce two or more pseudo-projection images, with one image primarily consisting of features generated by absorption by a dye/marker.

Claim 56 (new): A method for multi-dimensional imaging of a specimen region, comprising:

a) illuminating the specimen region;

b) continuously sampling along an optical axis at a fixed viewpoint through the thickness of the specimen region to produce a pseudo-projection image of the specimen onto a two-dimensional array of detectors during a single exposure of the two-dimensional array of detectors, wherein the pseudo-projection image thus formed includes an integration of a range of focal plane images; and

c) repeating steps a) and b for two or more viewpoints to produce a set of pseudo-projection images.